DETAILED DESCRIPTION

The present invention relates generally to a testing apparatus and method. Typically, the inventive apparatus is operated to generate gas or vapor and to place or present the gas or vapor in an environment wherein equipment is to be tested, thereby testing the operability of equipment provided therein. In particular, the present invention is applicable for use as a field-ready respirator fit testing device, field-ready air flow indicator, on a leak detection indicator for negative and positive enclosures. In each of these applications, the gas or vapor (hereinafter referred to as the "indicator gas") has a certain distinct property that is detachable by the human senses or equipment. More particularly, the indicator gas has a property that, when detected at a predetermined level or manner, is indicative of the local condition or equipment performance being tested. Typically, the detection of the indicator gas determines or confirms the operability or performance of equipment in the local environment (e.g., in the vicinity of the indicator gas).

Upon review of the detained description and the drawings provided herein, it will become apparent to one or ordinary skill in the relevant instrumentation or testing art that various aspects of the invention are applicable to other equipment and methods, and more particularly, to other testing devices, instrumentations and methods. Accordingly, the present invention is not intended to be limited to the structure and methods specifically described and illustrated herein.

FIG. 1 and FIG. 2 depict a testing device embodying several aspects of the invention. In one aspect of the invention, the testing device 11 of FIG. 1 is a one-piece, molded structure having a shape similar to that of a dropping pipette. The device 11 is preferably constructed of a polymeric material such as a common plastic and, more preferably, a low density polyethylene (LDPE). In one alternative of the embodiment, the device 11 may be formed from a multi-layer laminate (e.g., an LDPE and mylar bag combination). The laminate coating could be applied to reduce porosity and/or increase resistance to mechanical or chemical challenges of the original material of the apparatus. As an example, the laminate could serve as a barrier to water and oxygen. In another alternative embodiment, as shown in FIG. 3, the device 11 may be stored in an impermeable (e.g. mylar) bag to minimize air contact to the device 11 (until the testing operation). The exterior layer could be tightly sealed around the form of the device 11, or allow space for an inert gas or other material that would prevent degradation of any or all portions of the apparatus. In yet another alternative embodiment, the materials in the

material and storing a chemical substance in the container portion, such that upon operation of the bulb to draw air into the container portion, a detectable indicator gas is generated for presentation into the local environment.

In another aspect of the invention, a method of testing equipment in a local environment is provided. The testing method involves storing a chemical substance, reactive with air to produce an indicator gas, in a container formed substantially from a polymeric material and providing a polymeric squeeze bulb device in operative communication with the container and formed integrally, as one piece, therewith. A portion of the container tube is broken to provide an outlet, and then, the squeeze bulb is operated to draw air past the chemical substance to produce a human detectable indicator gas (scented gas, smoke, an irritant vapor fume, etc.). The indicator gas is then directed outward of the container and into the local environment. In the local environment, the indicator gas may be detected to determine the operability of the equipment in the local environment. For example, the indicator gas may be a visually observable gas, such that a detecting step includes visually observing the behavior of the indicator gas in the local environment or observing the flow of the indicator gas in the local environment.

Other and further objects, features, and advantages of the present invention will be apparent from the following detailed description of a presently preferred embodiment(s) of the invention, given for the purpose of disclosure, and taken in conjunction with the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side-view of a testing apparatus with a partial longitudinal section cut away, according to the present invention; and

FIG. 2 is a cross-sectional view of the testing apparatus in FIG. 1 taken along line AA.

FIG. 3 is a plan view with cut-out of a testing apparatus in accordance with another embodiment of the present invention